

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

What is claimed is:

- 5-1
A2
1. A voice switching system comprising:
- transmitting side attenuation means for attenuating a microphone input voice signal having a first level to produce a transmitting voice signal having a second level;
- 5 receiving side attenuation means for attenuating a receiving voice signal having a third level to produce a speaker output voice signal having a fourth level;
- transmitting side control means for comparing said first level of said microphone input voice signal with said fourth level of said speaker output voice signal to obtain
- 10 a primary difference therebetween, said transmitting side control means controlling, dependent on said primary difference, an amount of attenuation of said microphone input voice signal in said transmitting side attenuation means; and
- 15 receiving side control means for comparing said second level of said transmitting voice signal with said third level of said receiving voice signal to obtain a secondary difference therebetween, said receiving side control means controlling, dependent on said secondary difference, an
- 20 amount of attenuation of said receiving voice signal in said receiving side attenuation means.

2. A voice switching system as claimed in claim 1, said

receiving side control means further comprising:

a transmitting side signal delay buffer for providing said transmitting voice signal with a delay time, said delay time corresponding to a time for which said transmitting voice signal returns as said receiving voice signal through a communication line;

a transmitting side signal power estimation section for estimating a signal power of said transmitting voice signal outputted from said transmitting side signal delay buffer;

a receiving side signal power estimation section for estimating a signal power of said receiving voice signal;

a first comparator for comparing a primary estimated signal power of said transmitting voice signal estimated by said transmitting side signal power estimation section with a secondary estimated signal power of said receiving voice signal estimated by said receiving side signal power estimation section to obtain a ratio therebetween; and

a first attenuation amount calculation means for calculating an amount of attenuation in said receiving side attenuation means based on said ratio outputted from said first comparator.

3. A voice switching system as claimed in claim 2, wherein said receiving voice signal inputted to said receiving side signal power estimation section is silent at the initial time when said ^{transmitted} ~~transmitting~~ voice signal is inputted to said transmitting side signal delay buffer.

a 4. A voice switching system as claimed in claim 1, said transmitting side ^{controller} ~~control means~~ further comprising:

5 a microphone input power estimation section for estimating a signal power of said microphone input voice signal;

SC13
B2
66440-1688250
10 a speaker output signal delay buffer for providing said speaker output voice signal with a delay time, said delay time corresponding to a time for which a voice outputted from said speaker becomes said microphone input voice signal by a sound coupling with said microphone;

a first speaker output power estimation section for estimating a signal power of said speaker output voice signal outputted from said speaker output signal delay buffer;

15 a second comparator for comparing an estimated signal power of said microphone input voice signal estimated by said microphone input power estimation section with an estimated signal power of said speaker output voice signal estimated by said first speaker output power estimation section to obtain a ratio therebetween; and

a 20 a second attenuation amount calculation ^{section} ~~means~~ for calculating an amount of attenuation in said transmitting side attenuation ^{section} ~~means~~ based on said ratio outputted from said second comparator.

5. A voice switching system as claimed in claim 4, wherein said microphone input voice signal inputted to said microphone input power estimation section is silent at the initial time when said speaker output voice signal is

sub. a_3

a reverberation echo power estimation section for estimating a signal power of a reverberation echo signal obtained by said microphone input voice signal passing through a sound echo canceller;

10 a third comparator for comparing an estimated signal
power of said reverberation echo signal estimated by said
reverberation echo power estimation section with an
estimated signal power of said speaker output voice signal
estimated by said second speaker output power estimation
15 section to obtain a ratio therebetween; and

20

1600

A15D
B3